

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
10 February 2005 (10.02.2005)

PCT

(10) International Publication Number
WO 2005/012568 A2

(51) International Patent Classification⁷: C12Q 1/68 (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(21) International Application Number: PCT/GB2004/003342

(22) International Filing Date: 30 July 2004 (30.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0317826.6 30 July 2003 (30.07.2003) GB

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(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

A2

WO 2005/012568

(54) Title: ASSAY METHOD

(57) Abstract: Methods of determining susceptibility to resistance to anti-cancer drugs such as fluoropyrimidines, antimetabolites and platinum-containing compounds are described. DNA microarray technology was used to investigate changes in the transcriptional profile of the MCF-7 breast cancer cell line following treatment with fluoropyrimidines. Upregulated genes included the genes encoding Raf, K-ras, SLAP, phosphoinositide 3-kinase, COP9 homolog (HCOP9), apoptosis specific protein, APO-1 cell surface antigen, FLIP protein, cyclin G, CDC2, cyclin-dependent protein kinase -2, thymosin β -10, myosin light chain (MLC-2), gelsolin, thymosin β -4, SSAT, spermidine synthase, spermidine aminopropyltransferase, MAT-8 protein, annexin II, annexin IV, FGF receptor 2, transmembrane 4 superfamily protein, chaperonin 10, enoyl-CoA hydratase, nicotinamide nucleotide transhydrogenase, ribosomal protein S28, ribosomal protein L37, L23 mRNA for putative ribosomal protein, and ribosomal protein L7. Also described are assays for identifying novel chemotherapeutic agents.